

Serial No. 10/656,246  
March 17, 2005  
Reply to the Office Action dated December 20, 2004  
Page 8 of 11

### REMARKS/ARGUMENTS

Claims 1-14 and 16-30 are pending in this application. By this amendment, Applicants have amended claims 16, 17, 19-21 and 27-30 and cancel claim 15.

Applicants appreciate the Examiner's indication that claims 2-7, 10-14 and 17-21 would be allowable if rewritten in independent form including all of the features of the base claim and any intervening claims.

Applicants have amended allowable claim 17 to be in independent form including all of the features of base claim 15. In addition, Applicants have amended claims 16, 19-21 and 27-30 to depend upon allowable claim 17.

Accordingly, Applicants respectfully submit that claim 17 is allowable. Claims 16, 18-21 and 27-30 depend upon claim 17, and are therefore allowable for at least the reasons that claim 17 is allowable.

Claims 1, 8, 9, 15, 16, 22, 23, 26, 27 and 30 were rejected under 35 U.S.C. § 102(e) as being anticipated by Kaitila et al. (U.S. 6,788,170). Claims 24, 25, 28 and 29 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Kaitila et al. in view of Ella (U.S. 5,910,756). Applicants respectfully traverse these rejections.

Claim 1 recites:

"A piezoelectric resonator comprising:  
a substrate having one of an opening and a concavity;  
a vibrating section in which at least one pair of an upper electrode and a lower electrode oppose each other so as to sandwich an upper surface and a lower surface of a thin-film section having at least one layer of a piezoelectric thin film, the vibrating section being disposed over the one of the opening and the concavity; and  
**a heat dissipating film located over at least one of the upper electrode and the thin-film section so as not to cover the vibrating section.**" (emphasis added)

With the unique combination and arrangement of elements recited in Applicants' claim 1, including the feature of "a heat dissipating film located over at least one of the upper electrode and the thin-film section so as not to cover the vibrating section,"

Serial No. 10/656,246  
March 17, 2005  
Reply to the Office Action dated December 20, 2004  
Page 9 of 11

Applicants have been able to provide a piezoelectric resonator in which the heat dissipating film prevents unwanted vibration of the piezoelectric resonator, and greatly improves heat dissipation and voltage endurance so as to avoid degradation in the resonance characteristics even if a high voltage is applied, whereby the stability of the operation of the piezoelectric resonator is improved (see, for example, the paragraph bridging pages 2 and 3 of the originally filed specification).

The Examiner alleged that Kaitila et al. teaches all of the features recited in Applicants' claim 1, including the feature of "a heat dissipating film located over at least one of the upper electrode and the thin-film section so as not to cover the vibrating section." Applicants respectfully disagree.

The Examiner alleged that element 801 of Kaitila et al. is a heat dissipating film. However, element 801 of Kaitila et al. is specifically disclosed, in col. 7, lines 50-52 of Kaitila et al., as being "a frame-like layer 801 of dampening material on top of the electrode layers" (emphasis added).

First, Kaitila et al. fails to teach or suggest that the frame-like member 801 of dampening material dissipates any heat whatsoever. In contrast, the frame-like member 801 of Kaitila et al. is provided only to dampen the vibration of the piezoelectric excitable area, and performs absolutely no heat dissipation function. Thus, Applicants respectfully submit that the frame-like member 801 of Kaitila et al. certainly cannot be fairly construed as "a heat dissipating member" as recited in Applicants' claim 1.

Second, since the frame-like member 801 is disposed on top of the electrode layers, by definition, the frame-like member covers at least a portion of the vibrating section, which is defined by the area of the piezoelectric element 100 disposed between the upper and lower electrode. Thus, Applicants respectfully submit that the frame-like member 801 of Kaitila et al. is clearly not located so as not to cover the vibrating section.

Therefore, Applicants respectfully submit that Kaitila et al. fails to teach or suggest the feature of "a heat dissipating film located over at least one of the upper

Serial No. 10/656,248

March 17, 2005

Reply to the Office Action dated December 20, 2004

Page 10 of 11

electrode and the thin-film section so as not to cover the vibrating section" as recited in Applicants' claim 1.

Accordingly, Applicants respectfully request reconsideration and withdrawal of the rejection of claim 1 under 35 U.S.C. § 102(e) as being anticipated by Kaitila et al.

The Examiner has relied upon Ella to allegedly cure a deficiency of Kaitila et al. However, Ella clearly fails to teach or suggest the feature of "a heat dissipating film located over at least one of the upper electrode and the thin-film section so as not to cover the vibrating section" as recited in Applicants' claim 1.

Accordingly, Applicants respectfully submit that Kaitila et al. and Ella, applied alone or in combination, fail to teach or suggest the unique combination and arrangement of elements recited in Applicants' claim 1.

In view of the foregoing amendments and remarks, Applicants respectfully submit that Claim 1 is allowable. Claims 2-14 and 22-26 depend upon claim 1, and are therefore allowable for at least the reasons that claim 1 is allowable. In addition, claim 17 is allowable as indicated by the Examiner. Claims 16, 18-21 and 27-30 depend upon claim 17, and are therefore allowable for at least the reasons that claim 17 is allowable.

In view of the foregoing amendments and remarks, Applicants respectfully submit that this application is in condition for allowance. Favorable consideration and prompt allowance are solicited.

Serial No. 10/656,246  
March 17, 2005  
Reply to the Office Action dated December 20, 2004  
Page 11 of 11

The Commissioner is authorized to charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account No. 50-1353.

Respectfully submitted,

Date: March 17, 2005

  
Attorneys for Applicant

Joseph R. Keating  
Registration No. 37,368

Christopher A. Bennett  
Registration No. 46,710

**KEATING & BENNETT LLP**  
10400 Eaton Place, Suite 312  
Fairfax, VA 22030  
Telephone: (703) 385-5200  
Facsimile: (703) 385-5080